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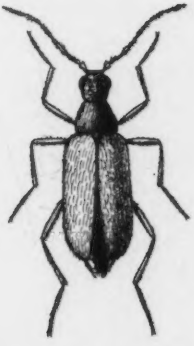

Ignotus ænigmaticus Slosson.

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ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XV. SEPTEMBER, 1904. No. 7.

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The Rev. Jerome Schmitt, O. S. B.

(Plate XV.)

Father Schmitt died at the Mercy Hospital, Pittsburgh, April 27th. He was born at Neuhausen, Wuertemberg, on May 20, 1857.

He entered the Scholasticate at St. Vincent's College, Beatty, Pa., July 5, 1869. Having successfully completed his clerical studies, Father Jerome, in July 1875, entered the novitiate of the Order. In 1881 he was ordained priest, and assigned to teaching Latin and Greek in the college course. In 1899 he was appointed Subprior. Official duties were not to his liking, he claiming his temperament ill fitted him to be a superior. He therefore importuned the Rt. Rev. Archabbot to relieve him, and when this was done, at the end of his first year's service, he announced the fact with childlike glee to his brethren, introducing himself as the very Reverend Ex-Subprior. He had eminent musical talent and was an old-time and reliable member of the college orchestra, which now feels his loss keenly. Almost thirty years ago he began the study of entomology and succeeded in reaching the foremost rank among men devoted to this branch of natural science. His specialties were the Formicoidea and among Coleoptera the families Scydmænidæ and Pselaphidæ. In regard to the latter particularly his studies and observations were well known

to his fellow workers, and they spoke of him as a keen student and able collector. His work was well known to men like Prof. H. F. Wickham, H. W. Wenzel, Prof. W. M. Wheeler, the Rev. E. Wasmann, the renowned Jesuit scholar and scientist, and Prof. Emery of Bologna, who all regarded him with respect and who were frequently indebted to him for valuable material. His biographer in the *St. Vincent's Journal* says: "May the memory of our dear Father Jerome and his well-spent life ever live in the hearts of his pupils, confreres and friends, and incite them to a generous emulation of his many noble qualities of heart and mind."

Robert M'Lachlan.

(Plate XVI.)

Robert M'Lachlan, chief of the British Neuropterists, monographer of the European Trichoptera, died at Lewisham, London, May 23, 1904. He was the son of Hugh M'Lachlan, of Greenock, and was born April 10, 1837, near Ongar in Essex, and educated chiefly at Ilford. He early acquired an interest in botany, subsequently in entomology, and the inheritance of sufficient means from his father enabled him to devote his life to scientific pursuits. As a lad of eighteen he made a voyage to Australia and China, and brought back a large collection of Australian plants. In 1896 he wrote of himself, "I have travelled much in Europe, but more as a collector than a tourist."

His interest in the Neuroptera (in the Linnæan sense) dates from the later fifties. In the sixties he successively monographed the British Trichoptera, Planipennia and Psocidæ, followed by a catalogue of the British Neuroptera in 1870.

All agree that his chief work was the *Monographic Revision and Synopsis of the Trichoptera of the European Fauna*, a volume of 630 pages and 59 plates containing about 2000 figures, many of which illustrate structural details from his own camera drawings. Published in parts from 1874 to 1880, it cost him almost eight years of constant work, he told the writer. A *First Additional Supplement* of 80 pages and 7 plates appeared in 1884.

ROBERT M'LACHLAN.

In 1864, with T. Blackburn, H. G. Knaggs, E. C. Rye and H. T. Stainton, he became one of the first editorial board of the *Entomologist's Monthly Magazine*, surviving all of these associates and continuing in that capacity to the time of his death.

Since 1884 many papers on British and exotic Neuroptera have appeared from his pen. The Perlidæ and Ephemeridæ, alone of the group, appear to have been untouched by him.

For many years he lived at 23 Clarendon Road, Lewisham, in the southeastern part of London, where was to be found the largest collection of native and foreign Neuroptera in the British Isles, far exceeding that of the British Museum. Here were to be seen, in the summer of 1895, when the writer first made his personal acquaintance, great stores of Odonata, European Planipennia, Ephemerina from all parts of the world, including the types of the Rev. A. E. Eaton, the Trichoptera on which the great European Monograph was based, and many extra-European Planipennia and Trichoptera. Many acknowledgements for the loan of dragonflies from this mine are contained in the works of Baron de Selys-Longchamps, and the latter, by his will, left a considerable sum of money to M'Lachlan, who in return was to work out the Selysian collections. The devisee, however, declared this "utterly and totally impossible," and at once renounced all right to the money.

M'Lachlan was equally liberal in affording use of his material to others and, as readers of the NEWS have had opportunity to observe, he voluntarily sent a number of his unique types through the dangers of a trans-Atlantic voyage to contribute to the greater completeness of the Odonate part of the *Biologia Centrali-Americana*, while previously not a few of his duplicates had made their way to find a home (permanently, it is to be hoped) in Philadelphia.

M'Lachlan took a considerable interest in general scientific questions, as one may learn from Darwin's citations from his papers and correspondence in the *Descent of Man*.

He took an active part in various scientific associations, being a fellow of the Entomological, Linnæan, Royal, Zoological and Royal Horticultural Societies in London; of the Entomological Society he was Secretary 1868–72, Treasurer

1873–75, 1891–1904, and President 1885 and 1886. As Corresponding or Honorary Member, his name appeared on the lists of the Entomological Societies of Philadelphia (elected 1866), Belgium, Holland, Sweden, Switzerland, and others.

Twenty-four years younger than the great Belgian master, he has followed him within four years. *The captains and the kings depart.* P. P. C.

Micro Cyanide Bottles.

By Charles Stevenson, Montreal, Que.

Mr W. D. Kearfott, in his suggestions on collecting Micro-Lepidoptera recommends "the common test-tubes, which can be purchased in any drug store," for use as cyanide bottles (Ent. News, xv, 4, p. 128). These, as he states, are very fragile, and necessitate great care in handling; for in breaking (which they will often do with the pressure of inserting the cork), they are liable to badly cut the hand or maim the fingers, and probably produce serious results if the wound could not be treated immediately, as mentioned. This drawback can be overcome by using a test-tube not generally heard of outside a chemical laboratory, usually called "ignition tubes," made of Bohemian infusible glass, These can be obtained in the size recommended. They have a thick wall and are very strong.

They also have the advantage of having the mouth much more flared. They cost more, about ten cents each, but are worth it when one runs the risk of having his hand in a bandage for many days by using the common tube—not a very desirable circumstance in the midst of the collecting season, especially to a student of micros. Druggists do not usually stock them, but they should be obtainable from any dealer in chemical apparatus.*

Another suggestion,—corks have a faculty of disappearing at inopportune moments. By attaching the cork with a piece of string to the tube, this cause of much worry, perhaps loss of valuable specimens, and inelegant language would be avoided.

*The writer will gladly supply fellow entomologists unable to get them, with an address where they can be obtained.

Notes on the Orthoptera of the Keweenaw Bay Region of Baraga County, Michigan.

By James A. G. Rehn.

During the summer of 1903 Mr. Morgan Hebard, of Chestnut Hill, Philadelphia, spent considerable time collecting Orthoptera in the vicinity of Pequaming, Baraga County, Michigan. On his return, Mr. Hebard very kindly turned his entire season's work over to me for determination, and also presented the Academy of Natural Sciences with a very representative series.

As the northern peninsula of Michigan has figured little in entomological literature, Mr. Hebard has, at my suggestion, prepared a preliminary account of the region from which the collections were made, thus forming a basis for future remarks on the region. Groups of insects other than the Orthoptera were by no means neglected by Mr. Hebard, and it is to be hoped that reports on the other orders may soon appear. Mr. Hebard's notes are all given in quotation marks, and all statements thus designated should be credited to him.

"Pequaming, Baraga County, Michigan, is a small lumber town situated on a point of land which juts out into Keweenaw Bay, nine miles from its head. It is about twenty miles distant from the famous Upper Peninsula copper country, most of which lies to the north on Keweenaw Point. The town is on the southern shore of Pequaquawaming Point, and is therefore protected from the tremendous northeasterly gales which, at this point, have a clear sweep across Lake Superior of over one hundred and forty miles.

"Pequaquawaming Point is almost oval in shape (the Indian name signifying 'wooded oval') and is parallel to the mainland, from which it is separated by an open marsh three-quarters of a mile wide by one and one-half miles long. This marsh is in most places an open meadow of tall marsh grass dotted with tamaracks; but along the edges these tamaracks form a dense growth intermingled with white cedars. Wherever there are tamaracks it is safe to venture; for, although one sinks a foot or so at every step into the sphagnum, cranberry,

pitcher-plants and others which grow in these places, the roots of the trees seem to form a solid network underneath, but in the open places the grasses grow on a thin mat of decayed vegetable matter, under which there is nothing but ooze for many feet.

"On the other side of this marsh a series of heavily wooded hills, in most places more than one hundred feet high, stretch toward the northeast more than sixteen miles, forming Point Abbaye, which is very wild and almost entirely covered with a virgin forest of hemlock, pine and hardwood trees and in some places by dense cedar swamps. The gloom of the forest under the far-reaching boughs of great trees is not inducive to Orthoptera, but game is abundant. Bears, wolves, lynx and wildcats are known to inhabit these forests, and deer are abundant. A lynx once followed me for quite a distance when I was out bound for the hemlocks in search of *Podisma*. Across the marsh, along the foot of the hills, a brule (a tract of woods which has been killed by fire) extends for over a a mile, now covered in many places by a vigorous young growth of aspen; but, where the charred trunks are still standing, the underbrush is chiefly composed of hazel bushes and raspberry vines. In this place, where the sun has easy access to the ground and the grass is consequently abundant, I found the collecting to be very good. The country back of the nearby towns of L'Anse and Baraga is heavily wooded except in the vast tracts where forest fires have swept through, leaving nothing but charred remains; there are also many farms, as the soil, although in most places stony, is very fertile. The L'Anse et Vieux Desert Chippewa Indian Reservation extends along the shore of Keweenaw Bay between Pequaming and L'Anse, and in the pastures of the Reservation I found the collecting to be of the best. On the north the Pequaming marsh is separated from the lake by a narrow strip of sandy soil, covered with Norway and white pines and carpeted with huckleberry bushes, arbutus and other sand-loving plants; but the only insects to be found there were a host of dragonflies, a few beetles and the scarce butterfly, *Colias interior*. On the south this marsh extends almost up to

Pequaming Bay, leaving just room for the wagon road from Pequaming to L'Anse. Along this road, among the driftwood, the Orthoptera fairly swarmed. The geological formation of Pequaming Point is of three distinct varieties; the end on which Pequaming is situated was formed by the action of water, which piled a great mass of boulders and stones; a very small amount of earth now covers these, and consequently the surrounding pastures are rocky; the ground rises a short distance from the town, and it is there that the cliffs of soft red sandstone commence; a little over half a mile further out the stone changes abruptly to a much harder gray sandstone; the vegetation is, however, not affected, the top soil being all the same. The point is covered with a dense forest, in the higher and drier portions composed of maple, birch, oak, balsam, spruce, hemlock and pine,—the maple greatly predominating and the conifers much scattered. In the swampy portions the woods are denser and there is considerable white cedar. Over all the undergrowth is so dense that in hardly any place can one see more than fifty yards through the forest. The undergrowth is chiefly soft maple, balsam and hazel, and the ground is carpeted with ferns, lichens, mosses and grasses. The most beautiful tree in the fall is the mountain ash, when its clusters of bright red berries contrast splendidly with the green woods.

"I found the Coleoptera collecting splendid in the clearings here and there in the woods, but Orthoptera were scarce excepting in the fields and along the roads."

The specimens simply credited to "Baraga Co." are from points within a few miles of Pequaming, such localities being without geographic names and but slightly different from the other localities mentioned.

The general character of the Orthopterous fauna of this region is distinctly Boreal, practically no trace of Carolinian or Sonoran types being found. This is, of course, fully in accord with the evidence of the mammals and birds of the section.

BLATTIDÆ.

Periplaneta americana (Linn.).

"One immature specimen, taken in store, June 30, 1903."

ACRIDIDÆ.

Acrydium granulatum Kirby.

Twenty-four specimens; fourteen males, ten females. Pequaming, July 2, 5, 8 and 10 (marshy woods and swamps), L'Anse et Vieux Desert Reservation, September 4 (meadow). Baraga Co., August 21, 29 (woods, swamp).

"Moderately common in early July, about marshy spots on logging trails. They diminished rapidly in numbers, and by the middle of July had almost completely disappeared. I found them to be again somewhat plentiful about the end of August. They were very active, springing several feet, and, owing to the many shadows cast by overhanging branches of trees, they were very hard to follow and locate. I took but three specimens on high ground; these were taken in stony pasture on the Indian Reservation, on September 4th. The ground color of the majority was dark brownish or grayish; sometimes, however, the whole pronotum was a rich cream color. The pronotum was in many cases ornamented with two or four irregular, intense brown or black spots, and a white or cream saddle-like marking occasionally occurred in front of these, giving the insect a strange appearance."

These remarks also apply to the following species.

Acrydium acadicum (Scudder).

Three specimens; two males one female. Pequaming, July 5 and August 1 (marsh and cedar swamp). L'Anse et Vieux Desert Reservation, September 1 (meadow).

These specimens exhibit three color phases; one sooty black, another vinaceous cinnamon, with the lower surface, face and sides suffused with blackish, and the last with a median ochraceous bar on a blackish ground, relieved laterally by a pair of median, crescentic, velvety-black maculations. The latter type of coloration is very similar to that found in some specimens of *A. granulatum*.

Chloealtis conspersa Harris.

Twenty-two specimens; fifteen males, six females. Pequaming, July 2, 4, 7, 9, 18, 20, 22, 23, 26, 31; August 12, 17 (latter, on pine in meadow). Baraga Co., Aug. 30.

"At the beginning of July, when I arrived in Pequaming, the males of this species were rather common about brush heaps and stumps in open fields and pastures; I also took a few specimens in the woods, but they are sun-loving creatures and could never be found except in sunny spots. They soon diminished in numbers, and after August 1st hardly any were to be found. The first female was taken on July 7th. Only six females were seen during the entire season; four were taken on beds of dead leaves in the woods, one among the loose bark at the foot of the dead Norway pine which I visited so frequently and successfully in search of Coleoptera, and one in the road where it passes through meadows of tall grass. The females were very easy to capture when found; they are, of course, unable to fly, and their jump lacks entirely the elasticity so characteristic of the males, and is similar to but weaker than that of a female *Dichromorpha viridis*, which at a distance they somewhat resemble. The males, on the other hand, are, I think, about the best jumpers of any of the Orthoptera found in the eastern United States. They have a powerful spring, but it is their quickness which renders them so difficult to capture. When alarmed, they are not content with one spring to a place of apparent safety, but jump about with such speed that they can hardly be followed with the eyes, and never cease their rapid succession of jumps until deep under the nearby vines, twigs, or dead grasses, where they cannot be induced to stir, and owing to their color are perfectly safe. I have never seen a specimen where there was not a thick tangle somewhere near in which to hide. I was only able to catch them by listening until one of the musicians gave his "tsikk-tssikk-tssikk-tssikk-tsikk-tsikk," which was always lustily delivered; then, approaching within a few yards, I would wait, knowing that, if not as yet alarmed, the sound would be repeated in a few seconds; then, locating the sound, I would approach to within a few feet; even then it would be usually impossible to see the musician, and it would be necessary to wait motionless. If my approach had been sufficiently stealthy, the musician would at length disclose his position by giving a cautious "tsik." Pouncing upon him

while busy stridulating, I could usually take him before he could get in position to spring. So keen and shy are they, however, that often, after a careful advance, occupying several minutes, the singer would notice me when still several feet distant, and would not again make a sound, no matter how long I remained motionless.

"Their mode of stridulating closely resembles that of *Chorthippus curtipennis;* the sound produced is, however, far stronger.

"The males are brilliantly colored, the black lateral lobes of the pronotum and the coloration of the hind femora being very striking. The females, when resting motionless, greatly resemble a grayish twig, which resemblance is considerably augmented by the decidedly truncate abdomen."

These specimens are of the same general size as individuals examined from De Grassi Point, Ontario; Vermont; Norway, Maine and "Penna.," but considerably smaller than a pair from the cedar bogs of northern New Jersey. These latter are enormous, considerably exceeding specimens of *C. abdominalis* in size. One female specimen, taken on pine, August 17th, belongs to the long-winged form called *prima* by Morse, the tegmina and wings reaching slightly beyond the tips of the posterior femora.

Chloealtis abdominalis Thomas.

Seven males. Pequaming, August 12 and 21 (meadow). L'Anse et Vieux Desert Reservation, August 20 (road along lake shore), September 5 and 6 (meadow).

"I took but seven specimens of this species; all males. They were taken in August and early September along the lake shore. On September 5th two were captured while stridulating on the top of some decked hemlock logs. They were very spry, somewhat resembling in their movements and the sounds which they produce the males of *conspersa*. More specimens could easily have been taken."

Mr. A. N. Caudell of the U. S. National Museum has very kindly compared one of these specimens with males of this species from the northwestern States, and finds them identical.

The collection of the Academy contains no representative of the male sex.

The occurrence of this rather western type was not unexpected, as E. M. Walker recently found the species on the Severn River, Ontario.

Chorhippus curtipennis (Harris).

Seventy specimens, about equally divided between the sexes. Pequaming, July 9, 10, 14, 16, 27, 31, August 1, 5, 6, 8, 9, 17, 21, 28, 31, September 2, 3, 5, 6 (meadow, swamp). Silver Creek, August 27. Brulé on mainland opposite Pequaquawaming Point, July 20 and 22. Baraga Co., August 20, 21, 24 and 30 (meadow, barrens near marsh).

"This species first appeared in early July, and by the middle of the month was very common in all meadows of tall grass. It was also to be found in brulés and along roads where the grasses grew high, but never in the woods. It was still very plentiful when I left Pequaming (September 8th), but probably disappeared before the end of the month on account of the cold and frosts. The males are fairly good jumpers and also fly, but the females are unable to fly owing to their short wings, and appear very awkward in jumping.

"This species was never to be found in numbers except in meadows of tall grass, but there it fairly swarmed, and I was able at any time to take a dozen or more with a few sweeps of the beating net. The males always attempted to escape by jumping and flying, the females by hiding under the grass. This species was by far the most plentiful around Pequaming during almost the entire season."

About one-third of the series belongs to the extremely short-winged type, but quite a few intermediate between the two extremes are present. The coloration shows very great variation, as is usual in the species.

Mecostethus gracilis (Scudder).

Fifty-six specimens; fifty males, six females. Pequaming, August 1, 3, 5, 6, 8, 12 and 21.

"I found this species in but one locality, where, however, it was abundant for a month. It was a clearing of several

acres in the woods, less than a mile distant from Pequaming. The grass growing over the lower portion of this clearing is very thick and high, and it was in this that I found *Mecostethus* for the first time, on the first day of August. On going to this clearing on the morning of that day a new sound met my ears,—a loud, harsh, connected stridulation, repeated at intervals of a few seconds. Following these sounds up, I was at length able to procure several specimens of this beautiful locust. They had all very recently emerged, as indeed all the many specimens I caught a few days later. They were easy to capture with the net as they flew up, but when they hid in the grass, as they often did on alighting, they were almost impossible to find, as they blended exactly with their surroundings. The females did not appear till a week later, and, at the best time of the season, a morning's search would never reveal more than two or three of them; they were very lubberly and could hardly jump. By September 1st almost all had disappeared, and only a few specimens remained of the August host. Life colors:

"♂. General color:—Rich grass green, beautifully shaded and contrasting strongly with the rich carmine of the inner surfaces of the hind femora.

"♀. General color:—Yellowish brown, red inner surfaces of hind femora much paler than in the male."

Considerable variability in the length of the tegmina is exhibited in this series, some males having the tegmina considerably exceeding the posterior femora in length, while others have the femora but little surpassed by the tegmina. The females, of course, have this variability very marked.

Camnula pellucida (Scudder).

Fifty-two specimens; twenty-nine males, twenty-six females. Pequaquawaming Point, August 13 (meadow). Pequaming, July 9, 10, 11, 12, 14, 18, 23, 26, August 1, 8, 12, 18, 20, 21 and 31 (meadow, tamarack swamp). L'Anse, July 23 (meadow). Baraga Co., September 5 (meadow).

"This species first appeared on July 9th. They were common enough at the outset and increased in numbers till, by the middle of the month, they were swarming in almost every

dry pasture of short grass. In these localities they rose in swarms, flying low and swiftly for usually from twenty to thirty feet. They flew up so vigorously that single specimens were difficult to take, even with a net; and, had they not beeen so very common, it would have taken a considerable time to collect a large number. As it was, I could get a dozen or more in my net by sweeping the ground in front of me as I crossed a pasture. I have seen a specimen, when pursued, keep up a sustained flight of more than two hundred feet, never rising more than four feet from the ground, but flying more swiftly than one could run. The general color of these specimens was almost always light brown; two specimens, however, which I took, were so dark that the markings were hardly noticeable."

A considerable range in intensity of coloration is presented by this series, some specimens being extremely light-colored.

Hippiscus tuberculatus (Palisot).

Two males. Pequaming, July 6 and 18.

"During the season I saw but two specimens, both of which I took. They were males, and were easily captured with the net. The first was taken in a garden on July 6, the other on driftwood along the lakeshore on July 18th, more than a mile distant from the place where the first specimen was taken."

These two individuals are much darker and more uniformly colored than eastern specimens. a fact which has also been noticed by Scudder regarding specimens from Nepigon, Ontario, across Lake Superior. The intensity of the lemon-yellow humeral vitta of the tegmina is very striking.

(To be continued.)

Reduplication of the Tarsus in Hydrocharis.

By H. F. Wickham, Iowa City, Iowa.

Not long since, I received from Mr. Norman Criddle a specimen of *Hydrocharis obtusatus* Say, which he had taken near Aweme, Manitoba. The insect presents a remarkable struc-

ture, which should be placed on record, the literature of this subject being none too voluminous.

The abnormality manifests itself in the right hind leg; the coxa and trochanter are normal but the femur is more flattened beneath than its mate. The tibia is a trifle longer than it should be, the outer edge almost straight, the inner edge curved, tip dilated, the upper apical margin produced into a sharp point. From this dilated apex, which of course represents the consolidation of a pair of tibiæ, springs, first, a tarsus which is nearly normal except that it is slightly undersized, and, second, a paired organ (external to the first), which is composed of two tarsi united at base. The basal joint of this paired organ is broader than that of a normal tarsus, the second joint is twice as broad at apex as at base and is furnished at tip, in the middle line, with a bunch of small spines. From each side of this broad apex arises a well-formed ramus of three joints, the terminal ones bearing each a pair of normal claws.

Instead of the usual number of tibial spurs (two) we find that this leg bears three. The two internal ones, which may be assumed to represent the normal pair, do not differ essentially from those of the other leg, but the third, which is located on the middle of the inferior apical margin, is trifurcate at tip.

The accompanying figure is rather diagrammatic, but will show the general arrangement of the parts described. It will be noticed that the opposed surfaces are correlative or nearly so. They appear to occupy the position DAA of Bateson's scheme, illustrated on page 481 of his work, "Materials for the Study of Variation." The composite structure of the second joint of the supernumerary tarsus is well shown by the disposition of the hairs on the upper surface and of the small spines on the lower. Only the former appear in the figure, which shows a view from above.

Protective Resemblance.

By R. E. Kunze, Phœnix, Arizona.

Having during the past nine years extensively collected of the insect fauna of Arizona, some striking observations of the means resorted to by insects for purposes of self-protection have presented themselves. Insects suddenly started up from a place of rest or after pursuit of an enemy, will instinctively drop into a place of concealment, which it is difficult to detect. Many Rhopalocera rifle the flowers which most nearly agree with the colors of the upper surface of their wings, while others, with folded wings, admirably succeed in escaping detection.

Near Tucson I observed *Terias mexicana* feeding on flowers of *Acacia filicina*, a perennial plant two feet high, bearing white flowers and growing on the banks of ditches. This Acacia much resembles a sensitive plant, and affords ample protection to *mexicana*. Flowers the size of a thimble cover the axillary space of the leaf, and the greenish yellow of the insect is well protected by many bipinnate leaves and blossoms. *Anthocharis pima*, the earliest of our diurnals which flies in Maricopa County, alights on the yellow blossom of *Anisinckia spectabilis*, a hirsute annual found on sides of mountain and tableland. The small flowers crowded at the point of short racemes furnish a secure place for our golden *pima*. *Helenium hoopesii*, hardly distinguishable from the eastern elecampane, affords a safe retreat for *Gnophæla discreta*. This day-flying moth rests on the brownish-black disk of the larger yellow flowers, and when disturbed takes refuge on another flower of *Helenium*. Toward evening I have observed as many as three and four *discreta* resting on a single flower, so that one could push several into a cyanide bottle with perfect ease. This plant is found in moist canyons or near springs, at an altitude of 9,000 to 10,000 feet on the San Francisco Mountains, near Flagstaff. Another day-flying moth, *Melanchroia inconstans*, feeds on this same plant, and its bluish-black color quite harmonizes with the disk of *Helenium*. *Inconstans* is a little wary geometer, very hard to approach in the hottest sunshine, and I had to secure all with a net secured to an extension pole. Higher up on the mountain I have noticed *inconstans* resting

on the dark disk of *Rudbeckia laciniata*, another large yellow-flowered composite plant.

The orange-colored flowers of *Asclepias tuberosa*, well named the butterfly-weed, furnish nectar for *Argynnis nausicaä* and *Lemonias nais*, in the early part of the season, and are quite protective to these insects. At the headwaters of the Hassayampa these insects are found, and of *nausicaä* I have only seen two other examples near Flagstaff. So far I have not met with any other species of *Argynnis* in this territory. *Pieris protodice* is usually found on *Nasturtium officinale* or watercress, and when this plant is out of bloom may be looked for on the white flowers of *Dithræa wislizeni*, a crucifer found in the bottoms on the sandy banks of streams. This plant has very glaucous leaves and stems, flowers several times during the year, from early February until December, and is a favorite food plant of *protodice*. Rarely have I observed this white insect alight on any other colored flower.

Thecla apama feeds on the white flowers of *Ceanothus fendleri*, and when disturbed seeks refuge among the foliage of the same shrub. The bright green of the reverse side of the wings agrees perfectly with the color of the leaves. When frightened, I have seen it alight on the needles of *Pinus ponderosa*, if a bush of *Ceanothus* stood not conveniently near. *Apama*, with its wings folded, defies detection, illustrating mimicry in the fullest sense.

Pamphila bellus. This bluish-black skipper, with yellow fringe on its wings, is usually feeding on the prominent yellowish cones of *Rudbeckia laciniata*. It is not often observed on any other but this cone-flower. *Eudamus cellus* is its companion in the Huachuca Mountains, rifling the yellow flowers of *Rudbeckia*. On this flower *bellus* seems to be less protected than *cellus*.

Libythea bachmani, when frightened off the white flowers of *Baccharis emoryi*, an evergreen shrub, on which it feeds in September, selects for refuge the dry stems of the same plant, and with closed wings it is not easily discovered. The gray color of the dead twig and that of its wings on reverse side makes it wonderful to behold.

Cyphus placidus, a light green Curculionid of an almost glaucous color, a rare insect of Arizona, is one of the beetles defying detection. In September, 1898, I was entomologizing one day with the late Dr. H. G. Griffith, who came here to recuperate. We had collected species of *Nemognatha* from sunflowers, and *Crossidius intermedius* from *Ludvigia hardwickii*, when of a sudden, on our return to town, with an exclamation of joy and surprise, the doctor picked a *placidus* from the lappel of his coat, which in brushing through the net had dropped thereon. We made repeated search among the plants examined but could find no more. Subsequently I found the second *placidus* resting on flowers of *Ludvigia hardwickii*, the flower or leaf of which was not protective. Next to it grew a bush of *Atriplex torreyi*, the color of which in foliage and stem fully agreed with this beetle. I beat the bush vigorously and secured another such Curculionid, and from this time onward have succeeded in taking a few every year or two. I have often tried to discover this beetle on bushes from which it was obtained by beating, but very seldom succeeded. This Curculionid clings to the glaucous stem, which is of the same tint as the entire insect, and also agrees with the color of the leaf.

Ludvigia hardwickii is an evergreen shrub in this valley, producing yellow flowers at the point of each branch. This flower, appearing in dense masses is the host of *Crossidius intermedius*, a longicorn of a buff color with a black stripe between the elytra. This beetle is hidden between the closely appressed flowers, so that only its head and antennæ appear above the level of the flowerhead. The long antennæ serve to recognize this insect, which, on account of color and method of concealment, is rarely observed by anyone except an entomologist. The red cup-shaped flower of *Sphæralcea ambigua*, growing in desert arroyos, is the host of *Trichodes ornata*, a beautiful red and black beetle. The environment is quite protective in every sense to this finely colored insect, a variety of which is black and yellow in ornamentation.

The disk of the ubiquitous sunflower is a favorite place for species of *Nemognatha*, especially *luridus*, and *Gnathium*

minimum. These flower beetles prefer *Helianthus* to any other yellow composite, inasmuch as the yellowish or buff color harmonizes with the host. The most of our Malachidæ are found on the pale yellow flowers of *Prosopis juliflora*, or mesquite, especially in a season when there is a good honey flow. The color of flowers and insects is very similar.

That brilliant little Curculionid, *Magdalis lecontei*, if rightly informed, I always found on the needles of young *Pinus ponderosa*, high up in the Pinal Mountains. The iridescence of this beetle, predominating in a greenish violet, affords much security in the clustered needles of the pine. It flies in July. On the young shoots of the same pine I found *Polyphylla variolosa* in hiding. Before the expansion of the leafbud it is of a reddish-brown color, protective to this chestnut-colored June-bug. On the same young shoots I found a good-sized red Longicorn, the name of which I have forgotten, and which is quite uncommon. A lobate-leaved *Quercus*, as well as the leaves of the mountain walnut, just as dusk sets in, attracts the emerald *Plusiotis lecontei*, which this "gold-bug" as it is called in Arizona, alights on. *Plusiotis gloriosa*, popularly known as "silver-bug" in Yavapai County, because of the silvery stripes on its green elytra, prefers the glaucous leaves of *Juniperus occidentalis*, var. *monosperma*, which more nearly harmonizes with this beautiful beetle. The leaves of this juniper are silver-tipped and the young foliage is tinted bluish-green. *Plusiotis worthii*, another great rarity, I took a few of in the Huachuca Mountains, found resting in bright sunshine on the leaves of an evergreen oak, *Quercus emoryi*. The color of *worthii* is a glossy pea-green with lavender legs; it is as large as *Polyphylla variolosa*. The green glossy leaves of this oak are in perfect touch with this fine insect.

Psiloptera drummondi, a black Buprestid with an orange stripe across the thorax, affects the brown stems of old mesquite bushes during September, and is not readily observed until it moves around the branch trying to elude the pursuer. *Chrysobothris 8-punctata* often is found in company on the same host, its dark-brown color agreeing with the mesquite bark. A much larger Buprestid, black with a purplish sheen,

and when fresh yellow-dusted, is resting on the green branches of *Parkinsonia microphylla*, otherwise known as the "Palo Verde" of our desert. The latter is a small tree from ten to fifteen feet high, and this beetle has a fondness of resting on the higher branches of this thorny *Parkinsonia*, so that we have to use a net fastened to an extension pole. The much smaller *Sphænotica saturnalis* rests on dead branches of the same wood, the darker color of which is quite protective. Another fine Buprestid, *Gyascutus obliteratus*, heavily dusted with yellow powder, and the ground or body color being of a greenish-gray, is found on young "Palo Verde," the stems of which are bright green. Under a glaring hot sun in May or June this beetle is very alert, and a silken net is soon torn to pieces by the long thorns of this shrubby tree. The bark and thorns of very young "Palo Verde" much resemble *obliteratus*.

The highly polished black *Acmæodera gibbula* Horn, which has a row of scarlet spots on the outer border of the elytra, I take early in April on the leafless branches of *Acacia greggii*, known as the "Cat's-claw bush" in Arizona. The bark of this *Acacia* is brown, covered here and there with dead epidermis, especially in the fork of branchlets. This *Acmæodera* clusters around these blackish spots and is not easily detected. Frequently it rests on the tip end of a branch. I gave some of these beetles to Dr. H. G. Griffith when he collected here, who sent them for determination to Mr. Fall, and the latter returned them as nov. spec., labeled *A. griffithii*. My insects had been previously compared with *gibbula* of Dr. Horn's collection, and so named.

The green branches of *Salix occidentalis* furnish the feeding place of that handsome *Chalcolepidius smaragdinus*, the most brilliant elaterid of Arizona. *Smaragdinus* is a gem of great rarity, and very uneasy when detected. *C. webbii* and *C. tartaricus*, both of bluish-green with a border of white hair around elytra, affect any kind of a willow branch, and even suck the sap from a wounded limb.

Probably for safety, *smaragdinus* ascends to the topmost branches, always the greenest of willow. When frightened it alights on the broad leaves of *Salix*, and quickly runs up the

stem, where the color is most protective. The shaking of a limb in ascending a tall willow quite often causes this *rara avis* to take flight, to the dismay of a collector.

A large green grasshopper, *Schistocera shoshone*, in the early part of summer, is found hiding among the green foliage and resting on a green stem of mesquite. Later in autumn it affects the leaves of cottonwood,—*Populus fremontii*,—as well as of *Salix fluviatilis*, the only trees and shrubs retaining green leaves until the latter part of December, in the Salt River Valley. There *shoshone*, as well as a *Xiphidium*, find a secure resting place.

Numbers of Mantids of many hues,—carneous, green, gray and brown,—select the leaves or stems of plants in unison with their own colors, and usually fully illustrate color protection. *Mantis religiosa*, quietly and patiently, with uplifted forelegs, may be noticed awaiting the approach of some other insect, and pounces upon it like a tiger upon his prey. This peculiar attitude has been likened by Mexicans to a child with uplifted hands engaged in prayer, and the popular name, "Niña de la terra," child of the earth, has been bestowed upon this insect.

A Bee Visitor of Pontederia (Pickerel-weed).

By H. L. Viereck.

Within the last five years I have received specimens of an interesting bee which seems to represent a new genus and species belonging to the Dufoureidæ and closely allied to *Halictoides* as represented by *H. marginatus* Cress. The first specimen that came to me was a male, taken at Darby, Delaware Co., Pa., August 10, 1899, by Mr. C. W. Johnson; the next specimen was a female, collected at Chestertown, Md., August 12, 1901, by Mr. E. G. Vanatta. Last year I received the first specimen with flower record from Mr. J. H. Lovell, who later sent me, in all, one female and ten males, taken on *Pontederia cardata* L., July 20, at Waldoboro, Me. I quote Mr. Lovell's interesting notes on the capture of these specimens. "On the afternoon of the 20th of July I was on the river in a boat. A thunder-shower was coming up in the northwest. The air

was very still and in that peculiar condition which precedes an electric storm. At such times insects are very sluggish and seek shelter against the approaching tempest. The silence was broken only by the rumbling peals of the distant thunder, following the bright flashes of lightning, which illumined the dark thunder-heads of the clouds. It became necessary for me to hasten homeward. To my surprise I noticed on almost every one of the violet-blue spikes of *Pontederia cordata*, or the pickerel-weed, which in countless numbers fringed the stream on both sides, one to several of these bees. They were so inactive that I could easily knock them off into the cyanide jar. I collected about forty specimens, and might have collected hundreds. This phenomenon has never been repeated to my knowledge."

The technical description is as follows:

CONOHALICTOIDES n. g.

The narrow head, the tuberculate posterior coxæ, and the structure of the palpi clearly separate this genus from *Halictoides*.

Conohalictoides lovelli n. sp.

♀. 6-7 mm. HEAD:—Distance between the anterior ocellus and anterior margin of clypeus at least one-half again as great as the distance between the eyes on a line with the antennal sockets; width of temple nearly equal to the width of the eye; front closely, finely punctured, sparsely on the eye margins; frontal impression very slight, a mere indication of a median line, which, just above the insertion of antennæ, is a short, shallow, narrow impression; ocelli arranged in a low triangle, distance between posterior ocelli about twice the distance between the lateral and anterior ocelli and about equal to distance between them and nearest eye margin; vertex with the punctures larger and sparser than on the front; cheeks rounded, punctured much like the front; clypeus with the anterior margin rounded, convex, polished, with large, distinct, separated, irregularly placed punctures; labrum with indistinct curved striæ,irregular near apex; mandibles with a distinct internal tooth about one-fourth the length of the mandible from the apex; antennæ short, not reaching back to the tegulæ, scape shining, second joint longer than third, the rest subequal, all joints of the antennæ, except the first, dull with very short pubescence; pubescence of head thin, loose and pale, whitish except on vertex and frons where it is black, abundant on the sides of the lower half of the face, margin of the clypeus with a fringe of long, straw-colored hairs; black.

THORAX:—Prothorax rounded, dull, finely sculptured, more shining and distinctly punctured on the narrow median portion; mesonotum finely sculptured, dullish, with a long depression on each side of the middle of anterior margin, punctures of two kinds present with and without hairs, the setigerous ones the larger; scutellum polished, with large, sparse punctures; postscutellum dull, indistinctly punctured on the sides; tegulæ polished, rounded behind, indistinctly punctured; metathorax with a flat semicircular disc longitudinally rugulose, sides dull, with sparse setigerous punctures, posterior face bearing sparse setigerous punctures and a median, dull, impressed space; scopa with plumose hairs on the superior margin—in between the hairs are simple, metatarsus of posterior leg one-half the width of the tibia, posterior coxæ produced, tuberculate, claws cleft, the inner tooth nearly as long as the apical tooth; wings—distance from the stigma to the first transverse cubitus on the radius equal to about three-fourths the distance from the first to the second transverse cubitus on the radius, distance between the first transverse cubitus and first recurrent nervure on the cubitus a little greater than the distance between the second recurrent nervure and the second transverse cubitus, transverse median nervure slightly basad of basal nervure; pubescence present on the thorax, except on the disc of the metathorax, thin and whitish, most abundant and thickest on the sides of the thorax; entirely black, including stigma and nervures, membrane blackish, posterior tibiæ inclining to brown.

ABDOMEN:—Black, with testaceous margins to the segments, second segment depressed nearly one-half, shining, finely sculptured, covered with long and short hairs.

Maxillary palpi six-jointed, the first joint a little shorter than the second, the second joint about three-fourths the length of the combined length of the four terminal short joints, which are subequal; labial palpi four-jointed, joint one nearly as long as $2+3+4$, 2 a little longer than $3+4$, which are subequal, a very distinct fringe of hairs on basal joint of labial palpi.

♂. 6.5–7 mm. Similar to the female, with the following exceptions: Frontal impression hidden by pubescence on the lower half; antennæ moniliform, reaching beyond the tegulæ, all joints dull sericeous, joint 3 especially hairy, the hairs very short, joint $2=3$ in length, $2+3$ shorter than 4, 4 and beyond subequal; metatarsus of posterior legs about two-thirds as wide as the tibia; distance between second recurrent nervure and second transverse cubitus a little greater than the distance between the first transverse cubitus and the first recurrent nervure; abdomen rather polished, second segment depressed one-third, margins pruinose.

Cotypes in Coll. Acad. Nat. Sci. Phila. Paratypes in Coll. U. S. N. M. and Boston Society of Nat. Hist.

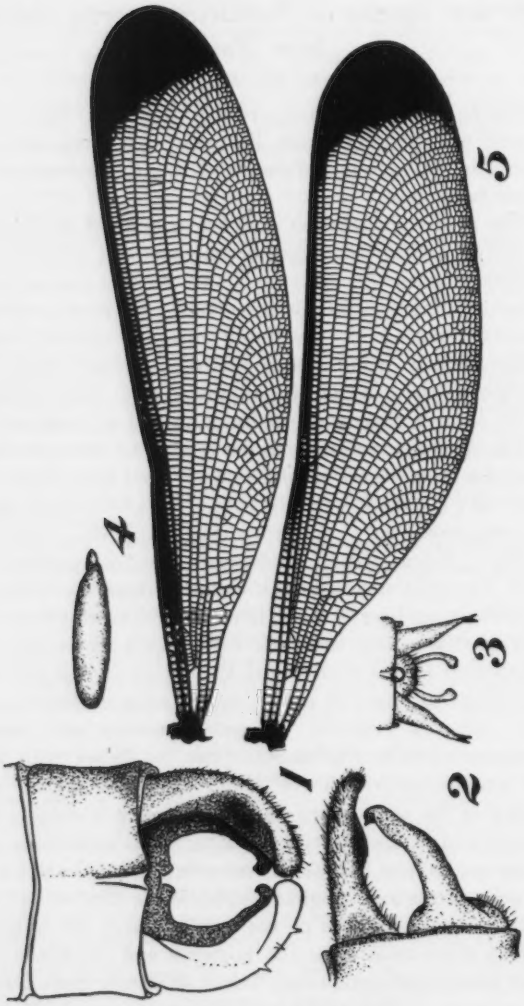
Type locality, Waldoboro, Me.

A new Species of Psolodesmus (order Odonata) from Formosa.

By E. B. Williamson.

Among some Odonates recently received from Rev. H. Loomis are specimens from Formosa of a large and beautiful species of *Psolodesmus*, of the subfamily Calopteryginæ, which seems to be new.

The genus *Psolodesmus* may be recognized as belonging to de Selys' Legion Calopteryx (exclusive of *Vestalis*) by the following characters: antenodals of the first and second series present, numerous, largely coinciding excepting possibly a few near the nodus; M_{1+2} rising abruptly upward from M_3; wings scarcely or not at all petioled; subquadrangle straight, not bent at the level of the arculus; basal space about equal to or shorter than the quadrangle; and a posterior branch of Cu_2 present. *Psolodesmus* is related to *Mnais* by the presence of a true stigma in both sexes; basal space free; arculus bent; M_{1+2} fused with the radius for a short distance; sectors not branched; posterior branch of Cu_2 not directed basally. From *Mnais*, *Psolodesmus* is distinguished by the more retracted nodus (in *Mnais* the distance to the nodus from the wing base is more than two-fifths the wing length, in *Psolodesmus* less than two-fifths the wing length, and in *Psolodesmus* in the front wings M_2 arises several cells beyond the subnodus, and not at the subnodus as in *Mnais*); by the more complex venation (secondary sectors and cross-veins more numerous in *Psolodesmus* than in *Mnais*); by the long and narrow quadrangle (in *Mnais* the quadrangle is scarcely as long as the basal space, in *Psolodesmus* it is about 1½ times as long, and with about twice as many cross-veins as in *Mnais*); by the medio-anal link (*i. e.*, the vein closing the distal end of the quadrangle and subquadrangle) of the hind wings at right angles to the long axis of the wing or with the anterior end slightly more basal than the posterior end (in *Mnais* the posterior end of the medio-anal link is decidedly more basal than the anterior end); and by the hind margin of the wings, especially the hind wings, behind the subquadrangle, decidedly more concave.



Psolodesmus dorothea n. sp.

Figs. 1 and 2.—Abdominal appendages of ♂, dorsal and profile views.
Fig. 3.—Dorsal view of the appendages of ♀.
Fig. 4.—Egg; size ½ mm. in length.
Fig. 5.—Wings of ♂.

Psolodesmus dorothea n. sp.

Total length ♂ 70–71, ♀ 60–61; abdomen ♂ 58–59, ♀ 48–50; hind wing ♂ 45–46, ♀ 43–45; width of front wing ♂ and ♀ 12; stigma front wing ♂ 2.5, ♀ 2; last femur ♂ and ♀ 8; tibia and tarsus to end of tarsal claws ♂ and ♀ 10; length of longest cilia on legs ♂ and ♀ 2+ mm.

Head black, postclypeus metallic green, second joint of the antennæ pale greenish on the anterior side, longer than the inconspicuous first joint, eyes brown. Thorax and abdomen slender; thorax metallic green, middorsal carina and lateral sutures very narrowly, sides below and prothorax, black; legs black, pale basally especially on the inferior surface, where the pale area extends about half the length of the femora; cilia numerous and long.

♂. Pectus black, a sharply defined pale spot near the posterior border. Wings hyaline with violet and green reflections, apices for a distance of of 5 mm. and stigma dark brown, the colored wing membrane with more brilliant reflections than the hyaline portions of the wings, coppery being most conspicuous; inner edge of brown area more or less concave; the dark brown or black of the wing apices extends basally more or less definitely along the anterior portion of the wings in the costal, subcostal and radial spaces, more heavily marked in the front wings where the color may extend quite to the wing base, doubtless variable with age. Antenodals front wings 33–37, hind wings 32; postnodals front wings 79–81, hind wings 71–75.

♀. Pectus pale, abdomen dark brown basally, shading posteriorly into black. Wings similar to the male, but with the brown on apices more extensive, 7 to 8 mm. in length, and the brown of the anterior margin less sharply defined; inner edge of brown apices nearly straight; stigma chalky white. Abdominal appendages slender, acute, as seen from the side about as long as segment 10; the extreme apex bi- or trifurcate.

Habitat—Formosa; 3 males and 2 females in my collection, all mature. Dr. Calvert has examined a ♂ and a ♀ and confirms my opinion as to the distinctness of the species. Named for my mother, Dorothea Kellerman Williamson.

The single hitherto known species of *Psolodesmus*, *mandarinus* McLachlan, originally described from a single imperfect ♂ from Amoy (Trans. Ent. Soc. Lond., p. 166, 1870) and later recorded and described from two males from Formosa by Hagen (C. R. Soc. Ent. Belg., xxiii, p. lxii, 1880), is at once distinguished from *dorothea* by the more extensive black on the wings (*mandarinus* has the apical fourth blackish brown) and the presence of a broad semi-opaque white band across the wings, no trace of which exists in *dorothea*. In coloration of wings *mandarinus* is described as somewhat suggest-

ing *Echo margarita*. *Dorothea* rather suggests the males of the species of *Calopteryx* of the *æquabilis* group, especially *dimidiata*, which species also were suggested to de Selys by *Vestalis apicalis*.

A New Species of Ecitopora.

By Charles T. Brues.

This is the third species of *Ecitopora* to be discovered in the United States living, like the other species of the genus, in the nests of the blind legionary ants, *Eciton*. The species can be readily distinguished by the accompanying figures.

Ecitopora nitidiventris sp. nov.

Length 2.25 mm. Pale fuscous. Head fuscous, with rather distinct sparse punctures. Thorax testaceous. Elytra testaceous, but appearing almost piceous in certain lights. Abdomen fuscous, lighter at apex and also at base, especially below. Legs pale testaceous. Antennæ thickened toward the tips; fuscous, paler at base; joints after the first, of about equal length, except the last, which is conical and a little longer than the two preceding joints; each of the latter one and three-fourths times as wide as long. Thorax slightly wider than long, narrowed slightly and broadly rounded behind; its lateral depressions deep and extending for its entire length; posteriorly there is a shallower median depression. Thorax and elytra sparsely golden pubescent. Abdomen bare, shining; each segment with a marginal row of about eight long hairs. Abdomen of equal width, rather suddenly obtusely acuminate at tip.

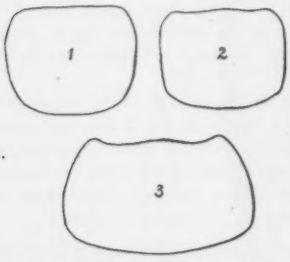


Fig. 1.—*Ecitopora nitidiventris* sp. nov. Outline of prothorax.
Fig. 2.—*E. tenella* Wasm. Same.
Fig. 3.—*E. laticollis*. Same.

Described from two specimens collected in a nest of *Eciton coecum* Latr., at Austin, Texas, during March, 1902.

E. nitidiventris is readily distinguished from *E. laticollis* Brues by the form of the thorax, and from *E. tenella* Wasm. by the bare, nonpubescent, shining abdomen, which has fewer marginal hairs upon the dorsal segments.

A New Colletes.

By Myron H. Swenk, Lincoln, Neb.

Colletes robustus n. sp.

♀. Length 12–14 mm. General form stout. Dull black, almost bare. Head slightly narrower than thorax, extremities of orbits rounded. Clypeus somewhat shiny, almost bare, flat, coarsely striately punctured, transversely depressed before apex, a small median impunctate spot at extreme base and one in middle of supraclypeal area. Face on either side of clypeus finely and closely punctured, but changing abruptly to coarse close punctures above insertion of antennæ, its pubescence short and white, becoming dense in a ruff about base of antennæ. Antennæ unusually short and heavy, wholly dark, with under surface of flagellum lighter than upper, and its first joint longer than second. Vertex slightly depressed along sides, bare and shiny, with large, coarse, separated punctures and small ones between. Occiput with short, rather dense white pubescence and no obvious dark hairs. Cheeks finely punctured and sparsely provided with pale pubescence. Malar space scarcely defined, extremely short. Labrum with five deep depressions separated by four prominent sharp ridges, the median depression largest. Mandibles heavy, a small notch well removed from the rounded tip, medially and apically rufescent or wholly black.

Prothorax with short but conspicuous, stout, sharp spines. Mesothorax punctured much like clypeus, the coarse crowded punctures running into irregular striæ at places, only a very small subimpunctate spot on disk, the anterior half with a deep median depression. Disk practically devoid of pubescence, the few scattered hairs on it very short, pale and black intermixed; a dense tuft of short pure white hair on tubercles, and longer and sparser gray hairs surrounding tegulæ and passing as a narrow fringe around posterior border of scutellum. Scutellum shining, its coarse round punctures well separated anteriorly but crowded posteriorly, postscutellum roughened by fine, close punctures and fringed posteriorly with long pale hairs. Metathorax without a superior face and no series of pits, the enclosure funnel-shaped, its bowl a little shiny, with the whole surface coarsely and irregularly plicate, the neck short and constricted at the base, which is not wider than the tip. Lateral faces of posterior truncation coarsely and weakly punctured on a dull very minutely punctured surface, exteriorly with a fringe of pale hairs. Mesopleura with coarse, crowded punctures forming striæ, on a small space immediately under tegulæ with finer separated punctures, very thinly clothed with pale hairs. Tegulæ piceous edged with testaceous, punctured. Wings slightly darkened hyaline, iridescent, very pubescent, nervures very dark brown to blackish, stigma brown.

Legs large, stout, black, more or less shining, especially on femora, the apical tarsal joints sometimes inclining to dull ferruginous, clothed

with short whitish pubescence, longer, dense and bristly on posterior femora and tibiæ, the inner apices of tarsal joints with rufous fringes. Claws ferruginous, tibial spurs paler ferruginous, the inner one with numerous minute but distinct pectinations. Abdomen dullish, the whole surface coarsely and closely punctured with punctures a little finer than those on mesothorax, the first segment somewhat striate punctate especially laterally, medially with a well defined ridge on posterior half, its apical margin depressed, with a very dense, white pubescent fascia concealing a smooth subtestaceous surface; second and following segments similarly punctured, apical margins of 2–4 similarly depressed, with similar fasciæ, 5 depressed but its fascia narrower and less dense, apex with pale pubescence. Other than the fasciæ the abdomen is but inconspicuously pubescent, all hairs pale. Venter similarly but much more finely punctured, with dense pale pubescence forming a scopa, pollen-bearing on three basal segments, no decided fasciæ.

♂. Length 9½–13 mm. Similar to ♀ except as follows:—Thorax above with rather long and erect pubescence, densest on margins and tegulæ, longer on scutellum and sides of metathorax, all grayish white; occiput and cheeks with long white pubescence; clypeus covered with pale pubescence, punctured similarly to, but, except at apex, much finer than in ♀; antennæ long, flagellum varying from black to bright testaceous beneath, basal joint less than one-half as long as second; vertex crowded with coarse punctures; malar space better defined, but still very short; labrum with the deep median groove, but lateral ones subobsolete; mandibles often largely rufous, especially terminally; prothoracic spine less conspicuous; punctures on mesothorax more separated, a rather large, shining, impunctate space on disk; metathorax with a poorly defined superior face and an imperfect, irregular series of subrectangular pits, longer than broad and slightly shiny; legs more or less ferruginous, all the tarsi brightly so, that on tibiæ and femora of variable amount, generally dull; anterior femora with a long, dense, white beard; punctures on abdomen generally separate, not striate, median ridge on first segment obsolete, fasciæ on segments 1–6; venter often testaceous, no scopa.

Specimens examined.—Types: ♀, Neligh, Neb., August, 1899, at *Petalostemon* (M. Cary); ♂, Dundy Co., Neb., June (E. H. Jones). Cotypes: ♀, Las Vegas, N. M., at *Petalostemon candidus*, July 21 (T. D. A. Cockerell); do., at *Solidago canadensis*, August 11 (W. P. Cockerell); 15 ♂ ♂, Dundy Co., Neb., June (E. H. Jones); ♀, ♂, Morton Co., Kan., 3200 feet, June, 1902 (F. H. Snow); ♀, Hamilton Co., Kan., 3350 feet (F. H. Snow); ♂, Clark Co., Kan., 1962 feet. June (F. H. Snow). A bee of the semi-arid interior.

The ♀ of *robustus* may be distinguished from the other

described North American *Colletes* by its large size, lack of ochraceous or fulvous tinge on the dorsal pubescence, and dull closely and coarsely punctured abdomen. Its nearest ally seems to be *C. gilensis* Ckll., from which it differs in numerous respects, among them, Mr. Cockerell informs me, in its palpi. The ♂ of *robustus* is evidently quite close to *C. robertsonii* D. T. (= *punctata* Robt.), which is also a *Petalostemon* visitor, but the abdomen is not shining, nor the whole of the legs ferruginous.

"On June 14th ——— ——— wrote me an apology for not having returned me some insects as per promise, being very busy at the office and head over heels in work in the 'bug room,' and said, 'I am also breeding a few things, and they are hatching on me all the time.' I replied, expressing my sympathy, and told him I had experienced the same discomfort during the '60s down in 'Old Virginny,' and that I had found the best thing to do was to rub the seams of my clothes with blue ointment until I could get a chance to boil them."

A few miles below the city of Cincinnati, on the Ohio side, the hills rise abruptly to about 450 feet above the Ohio River and enclose the narrow valley of Elkhorn Creek. The slope of these hills is toward the south, and the valley is never exposed to the north winds. Its wild flowers surprise us with their blossoms in February and March, and all of its spring vegetation is nearly three weeks in advance of our season. There is not a sunny day in winter that does not warm up the slopes enough to call forth the grasshoppers and flies.

This place is of very great interest to the entomologist, for it produces species reported thus far only from the far south. The praying Mantis, *Phasmomantis carolina*, is found here in abundance. On June 7th of this year I took a fine pair of *Polygrammodes hirtalis* Gn., heretofore reportd from Texas and Mexico. I have also taken here *Sciagraphia punctolineata* Pack., *Goniacidalia furciferata* Pack., and *Tricotaphe nonstrigella* Cham., and a number of species of Tortricids and Tineans not in the collections of eastern specialists and unknown to them. Many of the species collected here are found nowhere else around the city, and it appears from each collecting trip that there will be no end of surprises. I know a number of these species breed here, and it is difficult to suppose that any of the others fly from farther south across a river that is more than 1000 feet wide at this point. The spot, like an oasis in a desert, has a fauna all its own, probably an enduring one, for its inaccessible nature renders it of no interest except to the enthusiastic botanist and entomologist.—Annette F. Braun, Cincinnati, Ohio.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., SEPTEMBER, 1904.

The entomological world appears to be having an acute spasm over the nomenclature question. This is a chronic complaint with occasional exacerbations. Human beings are agreed as to mighty few things, and the only way we see to settle this vexed question is by an authoritative congress or court of last resort. At the present time it is difficult to find two persons who have exactly the same ideas on this important subject. As we said in the beginning, there are conflicting opinions about almost everything, religion, politics and lesser things, and we do not see why the question of nomenclature should be much of an exception. It is annoying, to be sure, but there is much to be done in entomology irrespective of this. If the collector is restive under the battle of the synonyms, let him take up some problem, such as a life history, and work it out to a conclusion for the benefit of knowledge. It will be good work, and which "mihi itch" genus the thing is placed in is of lesser moment.

CURATOR APPOINTED.—C. Abbott Davis, the well-known entomologist and former instructor in the Technical High School, has been appointed curator at the Park Museum, Providence, Rhode Island, to fill the vacancy caused by the death of James M. Southwick.

PROF. V. L. KELLOGG, of Stanford University, will spend the coming academic year on leave of absence in Europe. Personal letters will be forwarded. Requests for reprints of papers or for specimens, etc., should be addressed, to avoid delay, to the Department of Entomology, Stanford University, California.

Entomological Literature.

RECENT LITERATURE.—Our knowledge of the muscle development of the Coleoptera has received a valuable addition in a recent paper ("The Changes which occur in the Muscles of a Beetle, *Thymalus marginicollis* Chevr., during Metamorphosis," Bull. Mus. Comp. Zool. Harvard, xl, pp. 317-380, Pls. 7) by R. S. Breed of Harvard University, in which he gives a very minute account of the anatomical and histological changes which occur in the individual muscles of a beetle during metamorphosis. As the metathorax proved to be the most suitable segment for study, its muscles received the most careful examination. Some twenty-five muscles in this region are enumerated and the changes of each considered separately, as it was found that all do not undergo a similar metamorphosis. Of this number not a single one persists unaltered from the larva; the greater proportion undergo a metamorphosis, while a number of the larval muscles degenerate. Only two of the imaginal metathoracic muscles are of entirely new formation in the pupa. The only region of the body in which any of the muscles were found to persist unaltered from larva to adult is in the abdomen. This is to be expected, as the abdomen shows the least amount of external change during metamorphosis and contrasts with the thorax where a great amount of external remodeling is correlated with a radical change in the musculature. In the legs all of the imaginal muscles appear to be formed by a metamorphosis of the larval ones. The trend of recent opinion with regard to phagocytosis in the Coleoptera is upheld, as no evidences of this phenomenon were observed in any of the muscles of *Thymalus*, all degeneration changes being apparently of a chemical nature. The author believes that in Coleoptera the cells that have been described as phagocytes are in reality tracheal cells developed from the tracheoles of larval muscles.

C. T. B.

PROF. AND MRS. T. D. A. COCKERELL spent the summer in Europe. This month they go to the University of Colorado, at Boulder, to teach biology. Prof. Cockerell will have a research laboratory in the University.

PLEASE take notice that after June 15th my address for packages as well as usual mail will be: C. F. Baker, Estacion Agronomica, Santiago de las Vegas, near Habana, Cuba.

A VERY good substitute for cork for micro double mounts is to take a piece of soft felt, dampen it, and put a good quantity of photopaste on both sides, cover with white paper, press well, and dry. Then cut long, narrow strips with paper-cutter (any printer will do this for you if you haven't a cutter), and straighten the strips. When you are convinced the felt is thoroughly dry, cut your strips in desired lengths for pins. The strips can be cut very slender, are neat and also economical, as any old soft felt hat can be used for the purpose. In pushing your label pin through, give support to the felt, and with minutien pins use your plyers. Mrs. F. Weigand of Philadelphia suggested the idea, and it is practical.—H. HORNIG.

Doings of Societies.

A regular meeting of the Entomological Section of the Chicago Academy of Sciences was held May 19th, at the John Crerar Library, Eight members and three visitors present. Mr. Frank E. Lutz, of the University of Chicago, gave a talk on the Economic Importance of Mosquitoes and a brief sketch of a four years' attempt at their extermination on Long Island, New York. Mr. Weed, formerly of the Mississippi Agricultural Experiment Station, added some experiences of his own, and the subject was further discussed by the members. The field day on May 30th was held at Millers, Indiana.

A. KWIAT, *Recorder.*

At the meeting of the Feldman Collecting Social held May 18th, at the residence of Mr. H. W. Wenzel, 1523 S. 13th St., Phila., ten persons were present.

Mr. H. W. Wenzel announced the death of Father Jerome Schmitt of St. Vincent's Abbey.

Dr. Skinner exhibited two new species of *Epicauta*, which will be described in ENTOMOLOGICAL NEWS.

Mr. Wenzel showed a number of blind Carabids from caves in Austria.

Dr. Skinner spoke of a recent trip with Messrs. Kearfott and Daecke to the Orange Mountains, in the vicinity of Montclair, N. J., after *Pyrgus centaureæ*. He said that the species is very local, occurring only in hilly regions, and spoke of the value of a study of these extremely local distributions.

Discussed by Messrs. Franck, Daecke, Wenzel and Skinner, Mr. Franck referring especially to *Lycæna scudderi*.

Mr. Daecke showed *Cnorimoschema gallæsolidaginis* raised from galls; also *Culex cantator*, which was very abundant recently at Richmond Hill, Long Island.

WILLIAM J. FOX, *Secretary.*

EDITH M. PATCH, entomologist to the Maine Agricultural Experiment Station, at Orono, Me., is the first woman to occupy such a position in the United States. All women are not afraid of bugs and mice. We wish the lady great success.

EXCHANGES.

Not Exceeding Three Lines Free to Subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted.—Tortricids and Micro-Lepidoptera, especially from the West. Will pay cash and furnish pins, mailing boxes and full instructions.—W. D. Kearfott, 114 Liberty St., New York, N. Y.

Lepidoptera.—For exchange, fertile eggs of *Hemileuca maia*—Alfred C. Sampson, Sharon, Mass.

Exchange.—Would like to exchange Coleoptera from Austria for N. American. Correspondence German and French.—Otto Spicack, K. K. Postbeamtor, Sternberg, Mähren, Austria

Illinois, Lake Superior, Texas and Californian Dytiscidæ wanted in exchange for Dytiscidæ and other Coleoptera.—John D. Sherman, Jr., 390 Halsey St., Brooklyn, N. Y. City.

Wanted.—In exchange or for cash various species and varieties of the genus *Eubaphe* (*Crocota*). Other Lepidoptera also desired, especially mounted specimens. Send lists to A. Kwiat, 701 Larrabee St., Chicago, Ill.

Polistes.—I wish to correspond with entomologists all over the country who are willing to aid me in the study of this genus.—S. Arthur Johnson, Fort Collins, Colo.

Wanted.—Bulletin Brooklyn Entomological Society, vol. i, No. 10, or the complete volume.—Wm. J. Fox, care of NEWS.

Will exchange North American Lepidoptera for native, Exotic or European species. Send lists to Jos. H. Reading, 775 North Rockwell Street, Chicago, Illinois.

A full line of Arizona Coleoptera. Apply to agent, Mr. Chas. Palm, 172 East 64th Street, New York; Dr. R. E. Kunzé, Phœnix, Arizona, U. S. A.

Moths of Pennsylvania and New Jersey. The undersigned will give good exchange in cash or specimens for moths of Pennsylvania and New Jersey that are new to his collection. Send list of rare species only. Philip Laurent, 31 East Mt. Airy Ave., Philadelphia, Pa.

Native pupae for exchange, including *regalis, ceanothi, luna, calleta.* Native pupæ desired. W. T. Buxton, 17 Walter Street, Somerville, Massachusetts.

Lepidoptera. I have a few *luna* cocoons to exchange for *ceanothi* or pupæ of *Papilios* not found in this locality.—Miss Kate W. Strong, Setauket, Long Island, New York.

I have a few live pupæ of *Deidamia inscriptum* to exchange. I wish live pupæ of *Darapsa versicolor* and *Calasymbolus astylus.*—R. R. Rowley, Louisiana, Mo.

Megachilidae of the Americas wanted for study. Will exchange or purchase.—E. S. G. Titus, Div. Entom. Dept. Agric., Washington, D. C.

Wanted.—Copies of ENT. NEWS for January, 1903, Vol. xiv, No. 1.—Henry Skinner, 1900 Race St., Philadelphia, Penna

Lepidoptera.—*Papilio gundlachianus* for exchange.—Captain Wirt Robinson, Fort Caswell, North Carolina.

Wanted for Cash—Living cocoons or pupæ of Lepidoptera of U. S. A. W. T. Page, 6 Rylett Crescent, Shepherd's Bush, London, W., England.

Lepidoptera to exchange for specimens not yet in my collection. Send lists to Adolph Fischer, 502 School Street, Chicago, Ill.

Exchange.—Coleoptera in papers, with data. Will collect in this locality this season. Send lists.—Rev. J. C. Warren, Argentine, Kans.

Have for exchange.—Named species of Coleoptera, named and unnamed species Lepidoptera, Hymenoptera, Diptera, Neuroptera and Odonata of this locality, for named species of U. S. and Canada.—A.W. Andrews, 180 Helen Ave., Detroit, Mich.

Wanted.—Material for the study of the hybrid or polymorphic butterflies of the genus *Basilarchia*, including larvæ or pupæ of *arthemis* or *astyanax*, imagos of *proserpina* or *arthechippus*, or any specimens showing unusual characters. Liberal exchange. Specimens retained will be deposited in Museum of Comparative Zoology.—W. L. W. Field, Milton, Mass.

Cicindela wanted (Henshaw Numbers 19 to 32b inclusive), Coleoptera for exchange. Will collect in all Orders. Write before collecting.—V. E. Shelford, Zoology Building, Univ. of Chicago, Chicago, Ill.

Butterflies.—Will collect in this vicinity the coming season in exchange for named specimens in papers or expanded, found in other localities.—C. E. Montgomery, 10 Cabot St , Portsmouth, N. H.

Wanted—Insect galls and host plants for the study of distribution. Will exchange specimens.—Mel T. Cook, Greencastle, Ind.

Wanted.—Fertile eggs of *Citheronia regalis* and *Basilana imperialis*. Will pay cash for twenty-four of each.—Phineas Whitng, 106 Fairmount St., Lowell, Mass.

Fertile ova of *Attacus yama-mai, Rhodia fugax, Calligula japonica* and *cecropia-ceanothi* hybrids for good exchange; will give cash or exchange for pupæ of *angulifera* and *ova* of *H. nevadensis*.—Jas. Mitchell, 212 Indiana Trust Building, Indianapolis, Indiana

I have *Triptogon occidentalis, modesta, Sphinx chersis, Amp. versicolor, Catocala relicta* var. *bianca, phalanga, lacrymosa, frederici* and pupæ of *P. astylus* in exchange for others of same genus or for small white roses.—Chas. F. Timm, 131 Ralph St., Brooklyn, N. Y.

Orthoptera.—Determined Colorado species to exchange for species not represented in the Collection here. C. P. Gillete, Ft. Collins, Colo.

Wanted —*Papilios* of the world. Must be perfect. Send list and state what you wish in exchange. C F. Groth, 141 E. 40th St., New York.

Wanted in southern and western United States correspondents who will collect *Cicindela* in exchange for named Coleoptera of Mexico, South and Central America, Europe and Australia. Write at once. Zoological Museum, 37 Zoological Building. University of Chicago, Chicago.

Insects of all orders, chiefly from Kansas, Colorado, New Mexico and Arizona, for North Amercan species not in my collection. List of duplicates and desiderata on application. F. H. Snow, Lawrence, Kansas. (Prof. Systematic Entemology in the University of Kansas.)

Wanted, to complete files: Illinois State Laboratory Natural History, Bulletin, Vol. i, Nos. 3 and 4; Vol. iv, articles, 9, 14 and 15; Vol. v, articles 1 and 6 Many valuable exchanges to offer in different groups and subjects. James G. Needham, Lake Forest, Ill.

Wanted, for cash or exchange.—Fitch's 4th Report on Insects of New York; Smith's Reports on New Jersey Insects for 1889 and 1892; Bulletins 9 and 33 (old series), Parts iv and vi, Bibliography of Economic Entomology, Div. of Ent , U. S. Dept. Agr.; 15th, 16th, 18th and 19th Reports on Illinois Insects.—W. E. Britton, Agr. Exp. Sta., New Haven, Conn.

Wanted to exchange Lepidoptera. Write before sending list.—D. F. Berrenger, Fostoria, Ohio.

A few examples of *Microcyptus testaceus* Lec. for exchange. Desire Cleridæ and Cerambycidæ.—L. H. Joutel, 164 E. 117 St., N. Y. City.

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